



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|--|-------------|----------------------|--------------------------------|------------------|
| 10/791,190 | 03/02/2004 | Frank L. Hall | 4718.3US (00-0316.03/US) | 1971 |
| 24247 | 7590 | 06/28/2005 | | |
| TRASK BRITT P.O. BOX 2550 SALT LAKE CITY, UT 84110 | | | EXAMINER HEINRICH, SAMUEL M | |
| | | | ART UNIT 1725 | PAPER NUMBER |
| DATE MAILED: 06/28/2005 | | | | |

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/791,190

Applicant(s)

HALL, FRANK L.

Examiner

Samuel M. Heinrich

Art Unit

1725

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-40 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-40 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 02 March 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|--|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s)/Mail Date. ____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date <u>3/04;6/04;3/05</u> | 6) <input type="checkbox"/> Other: ____ |

DETAILED ACTION

Prosecution on the merits of this application is reopened on claims 1-40 considered unpatentable for the reasons indicated below.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1-40 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Apparatus or system claims 1-40 are described using method language limitations which may not clearly define the claimed structure.

Claim 34 recites the identical limitations which exist in claim 33.

Claim 35 describes "the laser" which has no antecedent basis in claim 32.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-40 are rejected under 35 U.S.C. 103(a) as being unpatentable over USPN 4,752,668 to Rosenfield in view of USPN 5,442,416 to Tateyama.

Rosenfield teaches the process and system for removing excess material from a semiconductor wafer employing an excimer laser. The wafer has been previously treated by treating a semiconductor with a resist, exposed, developed and selectively

removed for the purposes of patterning various areas of the wafer. But such a manufacturing process leaves some of the resist and contaminants on the wafer. Rosenfield recognizes the need to remove the excess resist and contaminants and provides a method and system for their removal with a laser.

Tateyama, while describing prior art, describes (Fig. 1) the method and apparatus for providing a substrate (wafer), subjecting to a preheating step (4) to remove moisture, cooled, conveyed to a coating unit where a photo-resist is evenly coated on the surface of the wafer, and the "photo-resist-coated wafer W is sent to a heating unit 8" where "the photo-resist solution on the wafer is converted into a stable film". This is the "baking" step in applicant's claims. Afterwards, the pattern is developed and excess resist material is removed.

The difference between the claimed invention and the combined teachings of Rosenfield and Tateyama is that Tateyama teaches the "prior art" recognized in Rosenfield, and Rosenfield provides the cleaning steps with a laser after the semiconductor wafer has been patterned, after a substrate (wafer) has been treated with an initial preheating, application of a resist layer on the substrate (wafer), and a baking step, according to the method of Tateyama.

Therefore, in view of the difference between the subject matter as a whole sought to be patented and the totality of the teachings of prior art, as established above, it would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains, to follow the teachings of Rosenfield and provide a step and apparatus for the removal of contaminants from a

Art Unit: 1725

substrate with a laser after the substrate has been preheated (to remove moisture), coated with a resist layer and heated (baked) and patterned in the method and apparatus taught in Tateyama.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Samuel M. Heinrich whose telephone number is 703 308 1168. The examiner can normally be reached on M-TH.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Thomas G. Dunn can be reached on 703 308 3318. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Samuel M. Heinrich June 16, 2025
Samuel M Heinrich
Primary Examiner
Art Unit 1725

SMH